

L Number	Hits	Search Text	DB	Time stamp
3	1	DE-4329205-A1.did.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/05/29 12:41
4	0	EP-0396175-B1.did.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/05/29 12:41
5	1	EP-396175-\$.did.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/05/29 12:48
6	1	JP-54163906-A.did.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/05/29 13:01
7	1	("4020148").PN.	USPAT; US-PGPUB	2003/05/29 12:51
8	2	JP-01014103-A.did.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/05/29 13:56
9	1	("4421669").PN.	USPAT; US-PGPUB	2003/05/29 14:14
10	1	("4008167").PN.	USPAT; US-PGPUB	2003/05/29 14:15
-	✓ 82	423/415.2,641.ccls. and (sodium or na) and percarbonate and (heat\$3 or thermal or dry or dried or drying)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/05/29 12:39
-	✓ 150	("sodium percarbonate" near3 stabil\$4) and (heat\$3 or thermal or dry or dried or drying)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/05/28 14:41
-	1	WO-200251745-\$.did.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/05/28 14:42

[B3796]

JP Patent Disclosure No. 54-163906

Title: Foaming, bleaching detergent composition.

(Page 2, bottom left column, line 19, to bottom right column, line 13)

Sodium percarbonate is readily decomposed by contact with heavy metal, pure water, etc. Surprisingly, it has been found that water of crystallization contained in sodium percarbonate accelerates decomposition of the sodium percarbonate. When sodium percarbonate is heated, not only is its own water of crystallization driven off, but so also is the water of crystallization of the sodium carbonate present as an impurity. The heating temperature for the treated sodium percarbonate must range from 70 to 110°C. Within the meaning of the present invention, therefore, the sodium percarbonate is heated and desiccated for 10 minutes to 2 hours at 70°C and for 10 minutes to 30 minutes at 110°C. The shelf life of the sodium percarbonate is not improved if the heating temperature is lower than 70°C. On the other hand, if the heating temperature is higher than 110°C, the active oxygen content decreases in the course of heating, and this is substantially disadvantageous.

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(Page 4, bottom right column, line 5, to page 5, right column)

#### Practical Example 1

The following mixtures were prepared using sodium percarbonates

subjected to various types of heat treatment, . . . . . in order to observe the shelf life. The results are presented in Table 1:

[Mixtures]

Sodium percarbonate

20 wt%

. . . . .

Table 1

Conditions for treatment of the sodium percarbonate	Quantity of active oxygen remaining* (%)			
	in the mixture	after 5 days	after 10 days	after 20 days
Not treated	100	26	2	0
90 minutes, heated to 80°C (according to the invention)	100	99	98	58
90 minutes, heated to 50°C	100	50	24	0
20 minutes, heated to 120°C	70	69	69	69

\* relative to the untreated mixture

As is evident from Table 1, the loss of active oxygen under conditions according to the invention is small, and so the sodium percarbonate remains stable in the course of time.

#### Practical Example 2

The following mixtures were studied in the same way as in Practical Example 1, in order to determine the influence of

various acidic substances on the shelf life of the sodium percarbonate. The results are presented in Table 2.

[Mixtures]

Sodium percarbonate

20 wt%

(treated for 90 minutes at 80°C)

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Table 2

	Acidic substances	Quantity of active oxygen remaining (%)		
		in the mixture	after 5 days	after 20 days
According to the invention	Succinic acid	100	99	98
	Citric acid	100	89	72
	Maleic acid	100	99	98
Comparison	Tartaric acid	100	70	36
	Oxalic acid	100	58	10
	Malonic acid	100	32	0
	Pimelic acid	100	58	34
	Glutaric acid	100	73	47
	Suberic acid	100	58	25

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